UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
SOUTHWEST FISHERIES SCIENCE CENTER
8604 LA JOLLA SHORES DRIVE
LA JOLLA, CA 92037

October 14, 2004 F/SWC1: DAD

CRUISE ANNOUNCEMENT

VESSEL: NOAA Vessel *David Starr Jordan*, 0404-JD, DS 04-02 (342).

CRUISE DATES: October 20 - 31, 2004.

PROJECT: Cowcod Survey, Fisheries Resources Division.

ITINERARY: Depart from San Diego, California at 0700 on October 20, 2004. Proceed to anchorage off Shelter Island for EK500 and EK60 echo sounder calibration experiments. At the conclusion of the calibration experiments, proceed to first station of the 43 Fathom Bank survey (position 23º 9.48' N, 117º 59.533') and continue the proposed pattern at a speed of 10 knots, until it is completed, or until sunset (see attached cruise track segments; waypoints provided electronically). Echo sounder surveys will only be conducted between sunrise and sunset (approximately 11 hours per day). At the conclusion of each survey segment, a CTD will be deployed in the area. If daytime, the ship will then transit to the next cruise segment and begin surveying until it is completed, or until sunset. At night, the ship will either be: 1) transiting to the next survey segment; or 2) anchored or hove to and staged to begin the next echo sounder survey segment at sunrise. Information about the distribution and abundance of acoustically surveyed rockfish will be relayed multiple times per day by VHF radio or ethernet modem to Dr. John Butler aboard F/V Outer Limits, who will be concurrently conducting ROV surveys for video verification of species. During the cruise, scientific personnel from each ship will be exchanged to facilitate cross-training on the echosounder and ROV operations and data processing. The ship will return to San Diego on October 31, 2004.

OBJECTIVES: Survey the rockfish in the Cowcod Conservation area (see attached map) using a combination of multiple-frequency echo sounders (R/V *David Starr Jordan*) and a remotely operated vehicle equipped with high-resolution video (F/V *Outer Limits*). The

combination of methods is being developed for assessing rockfish abundance over rocky bottom habitat.

- To continuously record acoustic targets obtained with the EK60 or EK500 scientific sounders.

- To test multi-frequency echosounder algorithms for bottom mapping, habitat classification, and identification of fish sizes and taxa.

- To conduct continuous underway sampling of surface waters using the ship's thermosalinograph and the SCS. Temperature and salinity data will be automatically merged with the time and position data from the ship's GPS navigational unit and logged by computer each minute.

- To monitor the physical oceanographic conditions corresponding to the acoustical surveys. A Seabird 19+ CTD (or ship's CTD) will be used to record temperature and salinity profiles at each survey location.

- To direct the location and timing of ROV operations conducted aboard R/V *Outer Limits*. Preliminary results of the acoustical surveys, in GeoTiff format, will be communicated by radio and ethernet radio link to the F/V *Outer Limits*.

PROCEDURES: The research vessel *David Starr Jordan* will conduct operations in conjunction with the fishing vessel Outer Limits.

Echo sounder calibrations will be conducted while anchored off Shelter Island, and optimally during hours of morning slack tide (4 am to 10 am on October 20, 2004). *Preferably, if the calibration experiments could be conducted on October 19, the slack tide window is roughly 12-3 pm.*

During daylight hours, survey each of the survey segments at a speed of 10 knots. Multi-frequency acoustical backscatter will be measured continuously by EK60 or EK500 echo sounders and the hull-mounted transducers (38, 70, 120, and 200 kHz), and recorded on computer hard disk. The data will be backed-up to external hard disk and DVD media. *The ship is to confirm that the cables for the 38, 70, 120, and 200 kHz split-beam transducers are all accessible in either the Gyro Room or Main Lab.*

Except for the EK500 or EK60 sounders being used for these surveys, all other echo sounders and sonars operating at

frequencies of 38, 70, 120, and 200 kHz must be secured during all survey operations. This includes the ship's 150 kHz broad bandwidth ADCP, 200 kHz Doppler speed log, and 200 kHz bridge echo sounders. Operation of the ship's 50 kHz ES60 navigation sounder should not interfere with the EK60 measurements, but all echosounder transmissions should be synchronized if possible.

The daytime between sunrise and sunset is approximately 11 hours:

Date	Sunrise	Sunset
Oct 20, 2004	6:57 AM	6:10 PM
Oct 21, 2004	6:57 AM	6:09 PM
Oct 22, 2004	6:58 AM	6:07 PM
Oct 23, 2004	6:59 AM	6:06 PM
Oct 24, 2004	7:00 AM	6:05 PM
Oct 25, 2004	7:01 AM	6:04 PM
Oct 26, 2004	7:02 AM	6:03 PM
Oct 27, 2004	7:02 AM	6:02 PM
Oct 28, 2004	7:03 AM	6:01 PM
Oct 29, 2004	7:04 AM	6:00 PM
Oct 30, 2004	7:05 AM	5:59 PM
Oct 31, 2004	6:06 AM	4:58 PM

The thermosalinograph data, indexed by GPS data and position information will be stored each minute throughout the cruise by the SCS. At the conclusion of the cruise, these data will be provided on CD to the Cruise Leader.

Survey information will be relayed by both radio and ethernet radio links to F/V *Outer Limits*.

R/V *David Starr Jordan* will need to coordinate activities with F/V *Outer Limits* which will be concurrently conducting ROV surveys for video verification of species. Temporary transfer of personnel between ships may be necessary to coordinate and facilitate cross training on equipment and data collection and processing activities. *Transfer of personnel between ships will be done by a tender to DSJ in accordance with all safety regulations.*

EQUIPMENT: Supplied by scientific party:

- Simrad EK60 echosounders (38, 70, 120, and 200 kHz)
- Data logging and processing computers
- GPS and antenna
- Ethernet radio, power supply, cabling, and antenna
- Calibration apparatus

• Seabird 19+ CTD

Supplied by *David Starr Jordan*:
• Seabird thermosalinograph
• Simrad EK500 Scientific sounder
• GPS time and position data in NEMA 0183 / RS232 format
• SCS acquisition for thermosalinograph and GPS data
• VHS radio for scientific communications with F/V Outer Limits

MISCELLANEOUS: 1. At the completion of the cruise an inspection will be made of scientific working and berthing spaces by the Commanding Officer or his designated representative. The Scientific party is responsible for the condition and cleanliness of spaces assigned to the scientific party.

2. The Cruise Leader will hold a pre-cruise meeting aboard the vessel while the ship is enroute to the first survey area.

3. The Cruise Leader will hold a post-cruise meeting with the CO upon termination of the cruise.

4. NOAA Fleet Medical Policy requires that all scientific personnel embarking on NOAA vessels complete an SF-93 form, Report of Medical History.

5. All dates and times recorded will be in GMT.

Figure 1. Cowcod survey plan. The Cowcod Conservation Area is pink and outlined in red. The planned survey waypoints and track lines are also in red. Bathymetric contour lines are 300, 200, and 100 m.